Avnet Zynq SoM PetaLinux 2015.4 BSP - PicoZed

To create a PetaLinux project using this BSP, you must have the PetaLinux 2015.4 tools installed on a supported Linux host. To use the BSP:

1. Extract the .bsp file from the compressed (.zip) archive to a location on your Linux host.
2. In a Terminal window, enter:
   > **petalinux-create -t project -s <path to .bsp file>**
   > **cd <new project name>**
3. To build the project for the designated target, enter:
   > **make**

For complete details on working with PetaLinux projects, download the PetaLinux 2015.4 User Guides from:

http://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/embedded-design-tools/2015-4.html

PetaLinux - 2015.4 Installation Files - 2015.4 Installation Files

Important Information

README

Download Type	Installation Files
Last Updated	Dec 15, 2015
Answers	Release Notes and Known Issues
Documentation	PetaLinux Tools Documentation

⬇ PetaLinux 2015.4 License and copyrights info (TAR/GZIP - 3.54 MB)
MD5 SUM Value: 7e9772ce396997d2898448ef52f25597

UG1144 - PetaLinux Tools Documentation: Reference Guide
UG1155 - PetaLinux Tools Documentation: First Boot Checklist
UG1156 - PetaLinux Tools Documentation: Workflow Tutorial
UG1157 - PetaLinux Tools Documentation: PetaLinux Command Line Reference

New Features for Avnet Zynq SoMs in 2015.4

There are a few changes to the 2015.4 BSP package over older BSP versions:

1. USB host mode supported
2. Migrated to open source busy box httpd embedded webserver
3. Networking performance tool iperf3 included, for more information on network performance testing using iperf3, please refer to the **Open Source Linux Ethernet Performance Test** tutorials on the community website

Continued Support of Features for Avnet Zynq SoMs in 2015.4

There are a number of features found in the 2015.2 BSP which have carried over to the 2015.4 package:

1. Top level Makefile template
2. Popular tool packages included in the root file system
   a. Tcf-agent
   b. Dropbear (ssh server)
   c. e2fsprogs-mke2fs
3. Weaved Installation files for secure remote access
4. Pre-built files for offloading bitstream to eMMC

A description for each of these services is provided in this document.

Makefile Template

There is a Makefile at the top level of a new PetaLinux project created from the BSP.   The Makefile provides a simple means to execute some of the more common PetaLinux commands, without having to remember (or type in) multiple options. You can open the Makefile in an editor to examine the targets, and to modify it as you wish.

New Packages in the Default Project

Additional packages have been included in the default project built from the BSP to simplify operation and development. All of the packages can be easily removed/modified using:

```
petalinux-config –c rootfs
```

1. **TCF-agent**: allows connection with an Eclipse environment debugger (such as the Xilinx SDK) during application development.
2. **Dropbear**: Provides an Secure Shell server (SSH) for remote login using a client such as Putty. This allows a remote connection to be established with a target system during development.
3. **E2fsprogs-mke2fs**: When used in conjunction with fdisk, allows for partitioning and formatting of SD cards or eMMC memory from the target.

Weaved Installer

Weaved is a software-only package that provides the capability to create a secure connection between an Avnet Zynq SoM/motherboard and any Internet-connected platform (desktop, laptop, tablet, smartphone…).   You may optionally install and activate the package free of charge on your Avnet device. SSH and HTTP services are provided in the default installation, but many other protocols are supported by Weaved. For additional information, visit:

<p align="center">http://www.weaved.com</p>

To try out the Weaved services, boot the target system and log in with the default root/root credentials. In the target console, enter:

```
cd weavedOEM
./weavedpinstall.sh
```

Respond with a y to all installation questions:

```
Do you want attach Weaved to your SSH server? [y/n] y

Do you want attach Weaved to your HTTP server? [y/n] y
```

Using a host computer on the same LAN as your Avnet SoM, goto www.weaved.com and register your new services.

1. For first time use, create a Weaved account. Otherwise log in with your credentials.

Internet of Things for Everyone

Use the email address that you registered with Weaved and your Weaved password to Sign In.

Email [ ]

Password [ ]   Click here to recover your Weaved password

SIGN IN

Click here if you need a Weaved account.

2. At the top of the page, you will see the new services you have just created on your device. Click the Register Now links to complete the registration to your Weaved account.

We found an unregistered **SSH** service on the **Xilinx ARM** service on your network at **192.168.1.115**. Use Register Now to complete registration to your Weaved account.

We found an unregistered **HTTP** service on the **Xilinx ARM** service on your network at **192.168.1.115**. Use Register Now to complete registration to your Weaved account.

3. Enter a descriptive name for your new service and click the Register Now button.

You are about to registered A Xilinx ARM from your PicoZed PL SSH project.

Service Address   80:00:00:34:98:00:00:28

Service Type   Xilinx ARM on Xilinx ARM

Service Name *   [Avnet_SoM_SSH]

REGISTER NOW

Registration may take up to 15 seconds to complete, after pressing the Register Now button.

4. Once registered, the new services will be available on your Weaved login page. Test the service by clicking on the **Name** of your HTTP entry to display the default web page for PetaLinux from your Avnet SoM/motherboard.[1]

New Service Plans Available

Go to My Account to choose a new service plan.

Your current list of services

Click on service names to connect. Your account allows for 30 minute connections on up to 1 concurrent service(s). You can Upgrade Now to get longer connection times and more concurrent connections.

Name	Type	Status	
Avnet_SoM_HTTP	HTTP	online	Share | Settings
Avnet_SoM_SSH	SSH	online	Share | Settings

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[1] If you receive a message indicating a problem with the registration, click on the **My Services** link to check if your new board was actually registered correctly.

Selecting the HTTP option will open a browser session to the embedded webserver running on your target board.
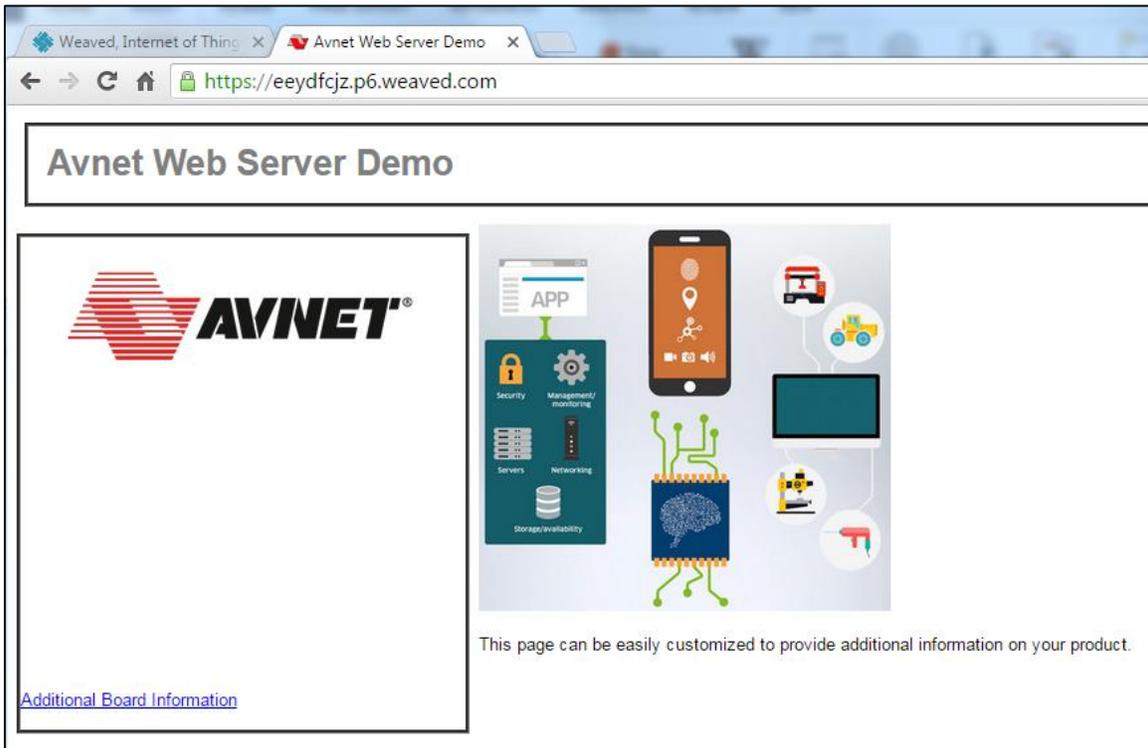
5. For instructions on using SSH and other services, please visit:
   https://www.weaved.com/using-weaved-with-ssh-scp-sftp/

PetaLinux is configured as a memory-only Linux system, so each time you reboot, a fresh installation is created. You can restart the services on the next reboot by running the installer again, and the script will detect your previous registration from information saved on the microSD card in the UUID directory.

```
Do you want attach Weaved to your SSH server? [y/n] y

SSH was previously installed.
Do you wish to keep your previous settings? [y/n] y

Do you want attach Weaved to your HTTP server? [y/n] y

HTTP was previously installed.
Do you wish to keep your previous settings? [y/n] y
```

Simply respond y to all installation questions to use the same registration information, and when you visit the Weaved site you will see your board online, ready for service connections.

Pre-built Files for Offloading Bitstream to eMMC

The pre-built folder contains two new files:

boot_emmc_no_bit.bin

>A modified bitstream is loaded from eMMC memory instead of from inside the primary boot image.   Exclusion of the bitstream reduces the size of this file significantly.

System.bit.bin

>The modified bitstream that is loaded by **boot_emmc_no_boot.bin** from eMMC memory.

The **Booting PicoZed using QSPI and eMMC** Application Note has instructions for using these files.